

WHAT IS CLAIMED IS:

1. A switching mode power supply comprising:

a power supply unit including a main switch coupled to the primary coil of a transformer, the main switch performing a switching operation at a predetermined duty in a normal operation mode, the main switch carrying out no switching operation during a first period and performing the switching operation at a first duty for a second period in a standby mode to supply power to the secondary side of the transformer;

a mode setting unit for controlling a mode setting voltage coupled to the output voltage of the secondary side of the transformer to operate the main switch in the normal operation mode or standby mode;

a feedback circuit having a controlled current source whose current value varies with the mode setting voltage of the mode setting unit, and a first capacitor connected in parallel with the controlled current source; and

a switching controller for controlling the main switch to carry out the switching operation at a predetermined duty according to feedback voltage charged in the first capacitor in the normal operation mode, the switching controller controlling the main switch to repeat a switching on state and switching off state in the standby mode, the quantity of current flowing through the switching controller in the normal operation mode being different from the quantity of current flowing through the switching controller in the standby mode.

2. The switching mode power supply as claimed in claim 1, wherein the switching controller comprises:

a switching driver for controlling the main switch to perform or stop the switching operation according to a switching control signal; and

a switching control signal generator for generating the switching control signal to control the main switch to carry out the switching operation at a predetermined duty according to feedback voltage charged in the first capacitor in the normal operation mode, and to control the main switch to repeat the switching on state and switching off state in the standby mode,

the switching control signal generator comprising:

a first diode whose anode is connected to the primary coil of the transformer;
a second capacitor connected between the cathode of the first diode and the ground;
a first resistor connected in parallel with the second capacitor;
a third capacitor connected between the first resistor and the ground; and
a first current source connected between the third capacitor and the ground, to make the quantity of current inputted to the switching driver in the normal operation mode different from the quantity of current flowing into the switching driver in the standby mode.

3. The switching mode power supply as claimed in claim 2, wherein the switching driver detects the normal operation mode so as to control a predetermined quantity of current to flow through the first current source.

4. The switching mode power supply as claimed in claim 1, wherein the switching controller comprises:

a switching driver for controlling the main switch to perform or stop the switching operation according to a switching control signal;
a switching control signal generator for generating the switching control signal to control the main switch to carry out the switching operation at a predetermined duty according to feedback voltage charged in the first capacitor in the normal operation mode,

and to control the main switch to repeat the switching on state and switching off state in the standby mode,

the switching control signal generator comprising:

a first diode whose anode is connected to the primary coil of the transformer;

a second capacitor connected between the cathode of the first diode and the ground;

a first resistor connected in parallel with the second capacitor;

a third capacitor connected between the first resistor and the ground; and

a zener diode connected between the third capacitor and the ground, to make the quantity of current inputted to the switching driver in the normal operation mode different from the quantity of current flowing into the switching driver in the standby mode.

5. The switching mode power supply as claimed in claim 3, wherein the zener diode is turned on in the normal operation mode such that a predetermined quantity of current flows through the zener diode.

6. A switching mode power supply, comprising:

a power supply unit containing a main switch for performing a switching operation in a normal operation mode and a switching operation in a standby mode;

a mode setting unit for controlling a mode setting voltage that operates the main switch; and

a feedback circuit having a controlled current source whose current varies with the mode setting voltage.

7. The power supply of claim 6, further comprising a switching controller for controlling the main switch, the quantity of current flowing through the switching controller

in the normal operation mode being different from the quantity of current flowing through the switching controller in the standby mode.

8. The power supply of claim 6, wherein the main switch can repeat a switching on state and a switching off state in the standby mode.

9. The power supply of claim 6, wherein the switching controller comprises:
a switching driver that controls the switching operation according to a switching control signal; and

a switching control signal generator for generating the switching control signal.

10. The power supply of claim 9, wherein the switching control signal generator comprises a current source to make the quantity of current inputted to the switching driver in the normal operation mode different from the quantity of current flowing into the switching driver in the standby mode.

11. The power supply of claim 10, wherein the switching driver detects the normal operation mode so as to control a predetermined quantity of current to flow through the first current source.

12. The power supply of claim 11, wherein the current source is a zener diode.

13. The power supply of claim 12, wherein the zener diode is turned on in the normal operation mode so that a predetermined quantity of current flows through the zener diode.

14. A method of operating a power supply unit, comprising:
 - providing a power supply unit containing a main switch, a mode setting unit, and a feedback circuit;
 - performing a switching operation in a normal operation mode;
 - controlling a mode setting voltage by operating a main switch in a normal operation mode or in a standby mode;
 - controlling the current source of the feedback circuit;
 - varying the value of the feedback circuit with the mode setting voltage of the mode setting unit;
 - carrying out the switching operation using the feedback voltage that is charged in the normal operation mode; and
 - repeating a switching on state and switching off state in the standby mode.

15. The method of claim 14, further comprising:
 - generating a switching control signal both to perform the switching operation according to a feedback voltage charged in the normal operation mode and to repeat the switching on state and switching off state in the standby mode;
 - performing or stopping the switching operation according to the switching control signal; and

wherein the amount of current flowing to the switching driver in the normal operation mode is different from the amount of current flowing into the switching driver in the standby mode.

16. The method of claim 14, further comprising detecting the normal operation mode so as to control the quantity of current flowing through a current source.

17. The method of claim 14, further comprising directing a current through a zener diode.

18. A method for making a switching mode power supply, comprising:

- providing a power supply unit containing a main switch for performing a switching operation in a normal operation mode and a switching operation in a standby mode;
- providing a mode setting unit for controlling a mode setting voltage that operates the main switch; and
- providing a feedback circuit having a controlled current source whose current varies with the mode setting voltage.

19. The method of claim 18, further comprising providing a switching controller for controlling the main switch, the quantity of current flowing through the switching controller in the normal operation mode being different from the quantity of current flowing through the switching controller in the standby mode.

20. A system containing a switching mode power supply, the switching mode power supply, comprising:

- a power supply unit containing a main switch for performing a switching operation in a normal operation mode and a switching operation in a standby mode;
- a mode setting unit for controlling a mode setting voltage that operates the main switch; and
- a feedback circuit having a controlled current source whose current varies with the mode setting voltage.

21. The system of claim 21, the power supply further comprising a switching controller for controlling the main switch, the quantity of current flowing through the switching controller in the normal operation mode being different from the quantity of current flowing through the switching controller in the standby mode.

22. An electronic apparatus containing a switching mode power supply, the switching mode power supply, comprising:

a power supply unit containing a main switch for performing a switching operation in a normal operation mode and a switching operation in a standby mode;

a mode setting unit for controlling a mode setting voltage that operates the main switch; and

a feedback circuit having a controlled current source whose current varies with the mode setting voltage.

23. The apparatus of claim 22, the power supply further comprising a switching controller for controlling the main switch, the quantity of current flowing through the switching controller in the normal operation mode being different from the quantity of current flowing through the switching controller in the standby mode.